10025698 - 1021904

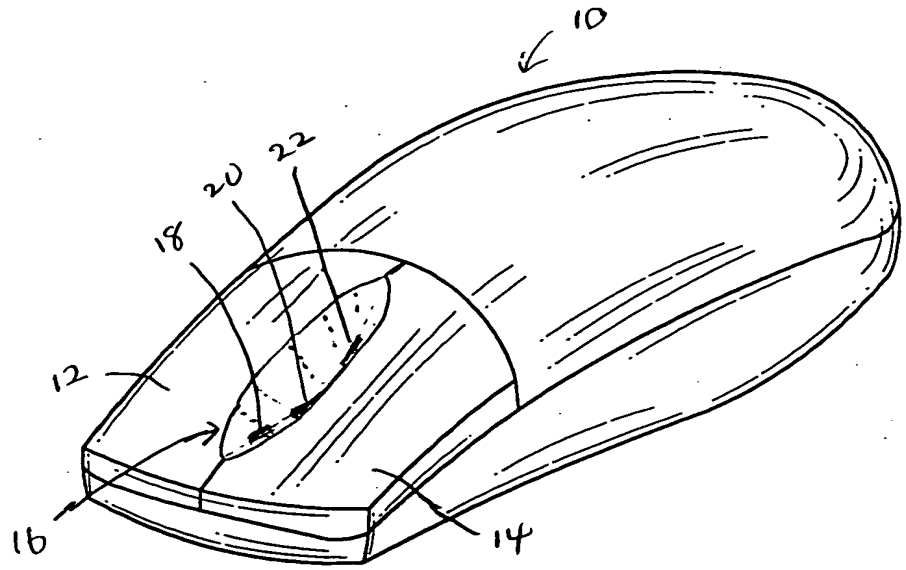


FIG. 1

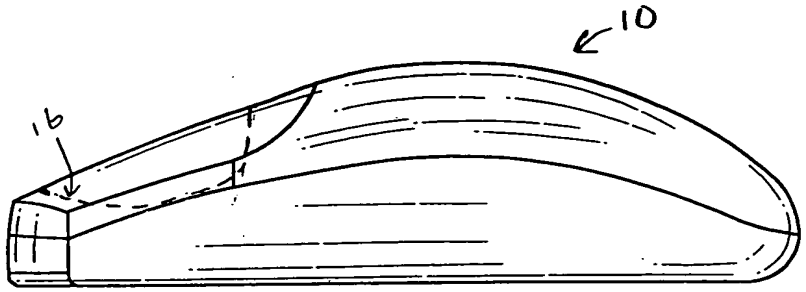


FIG. 2

FIG. 3

10/050,838 - 11/20/01

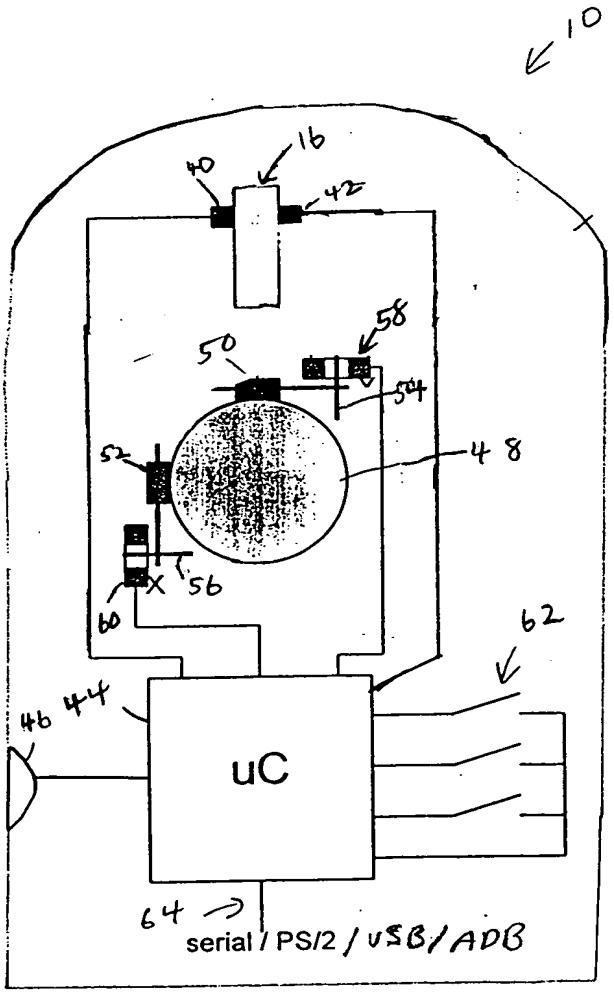


FIG. 4

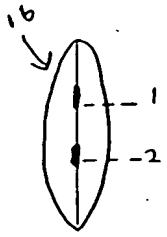


FIG. 5A

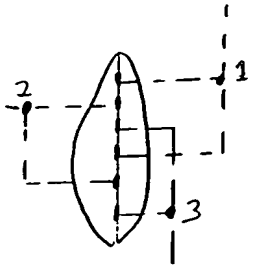


FIG. 5B

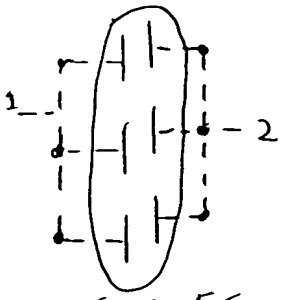


FIG. 5C

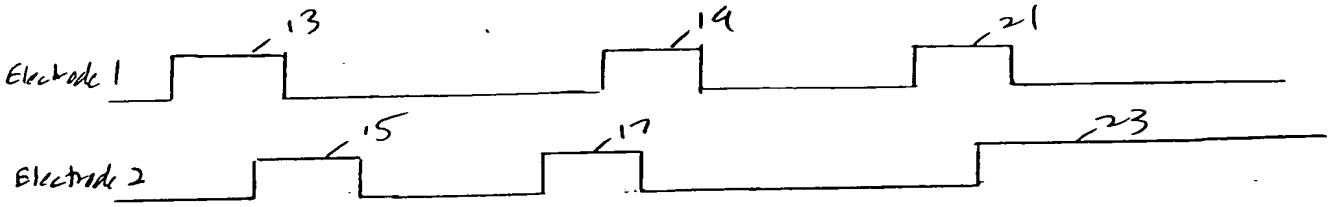


FIG. 5D

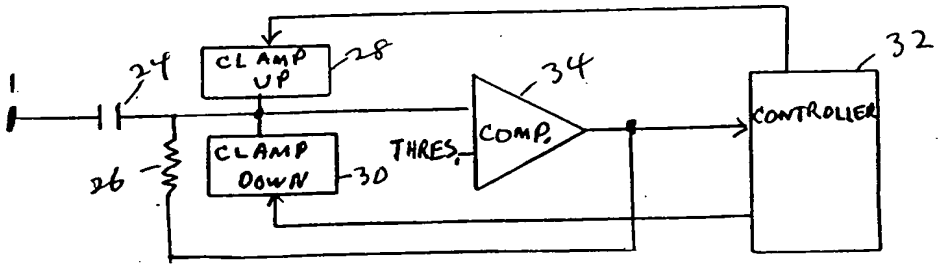


FIG. 6

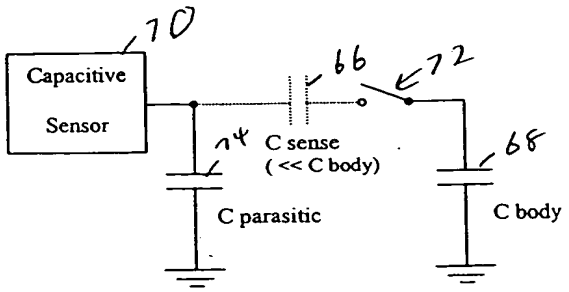


FIG. 7A

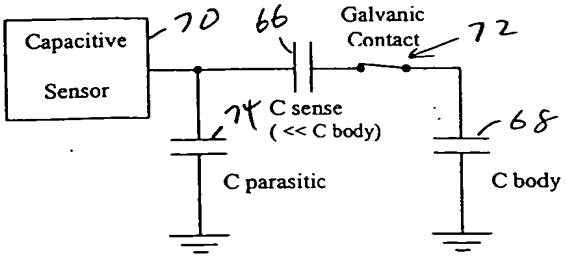


FIG. 7B

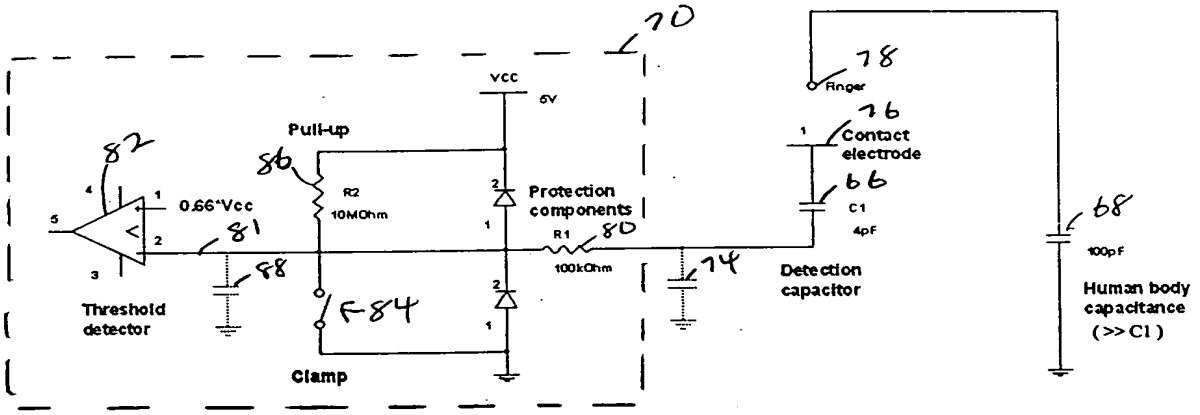


FIG. 8

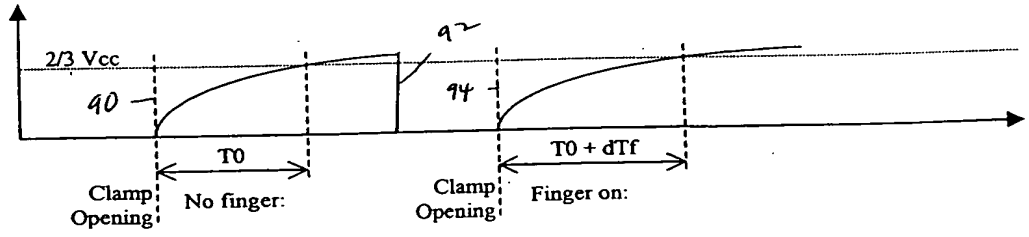


FIG. 9

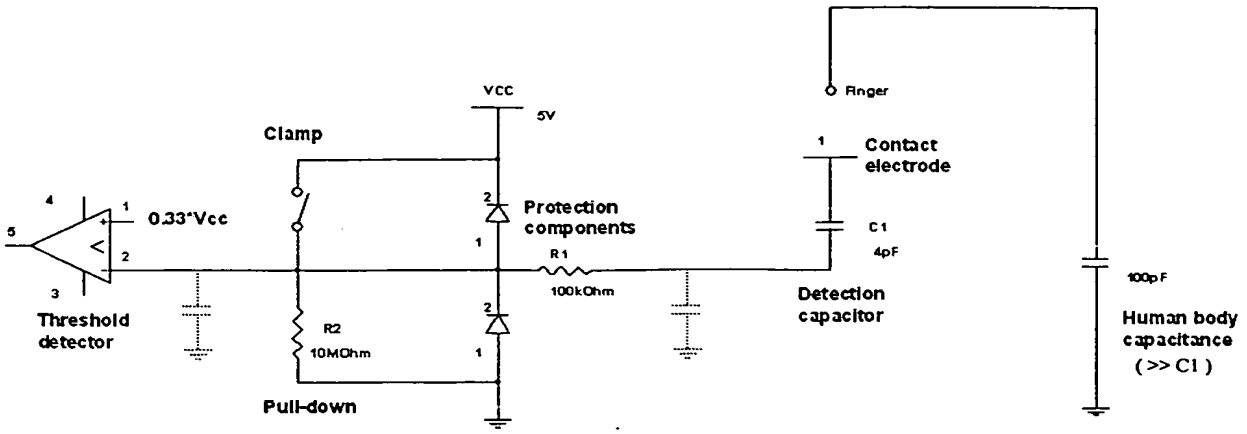

VCC
5V
Clamp
Finger
Contact electrode
Protection components
0.33*Vcc
C1
4pF
R1
100kOhm
100pF
Human body capacitance
(>> C1)
Detection capacitor
Threshold detector
R2
10MOhm
Pull-down

FIG. 10

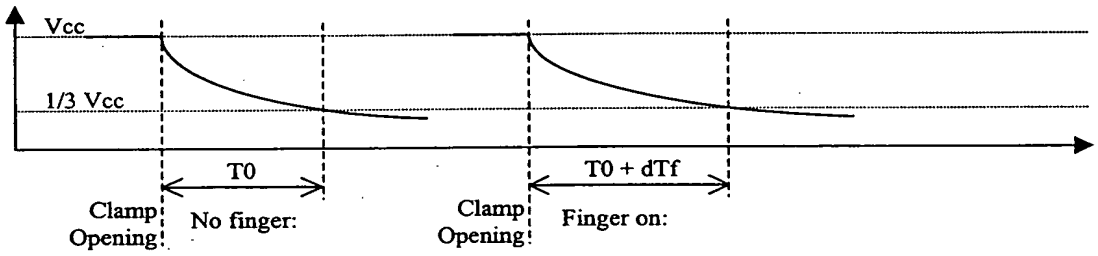

Vcc
1/3 Vcc
T0
T0 + dTf
Clamp Opening
No finger:
Clamp Opening
Finger on:

FIG. 11

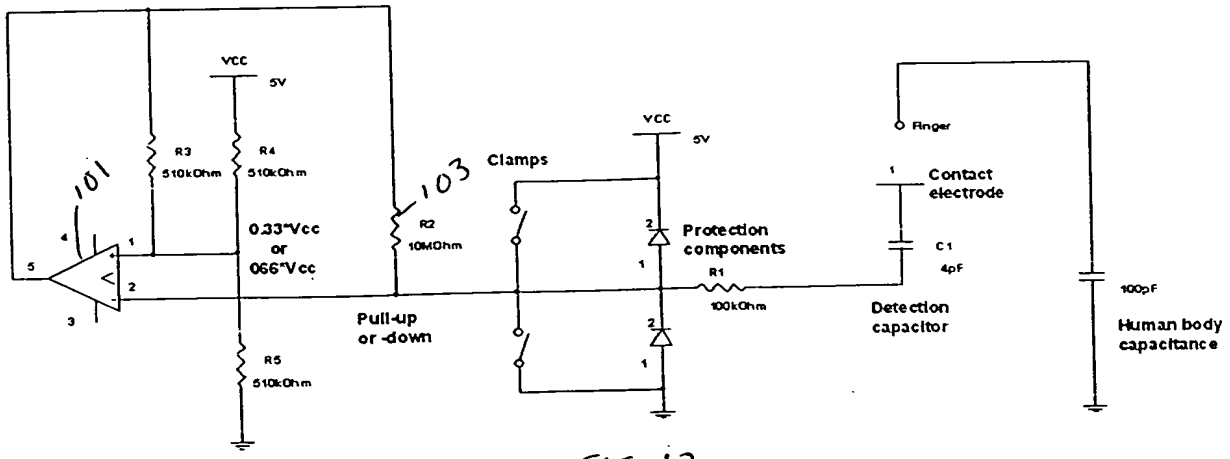


FIG. 12

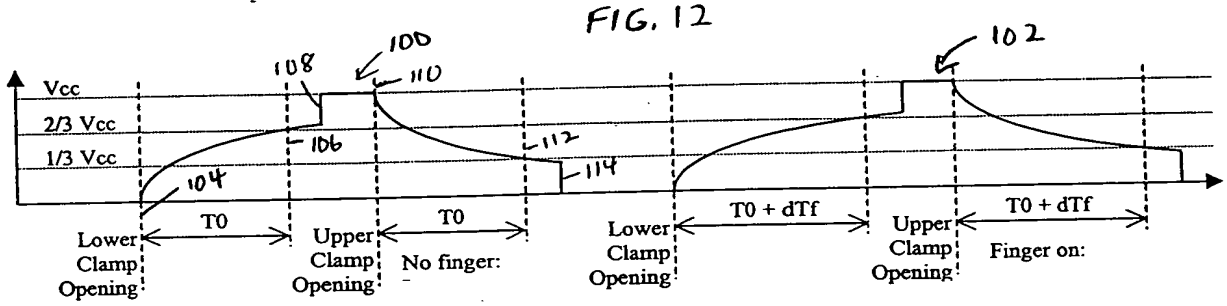


FIG. 13

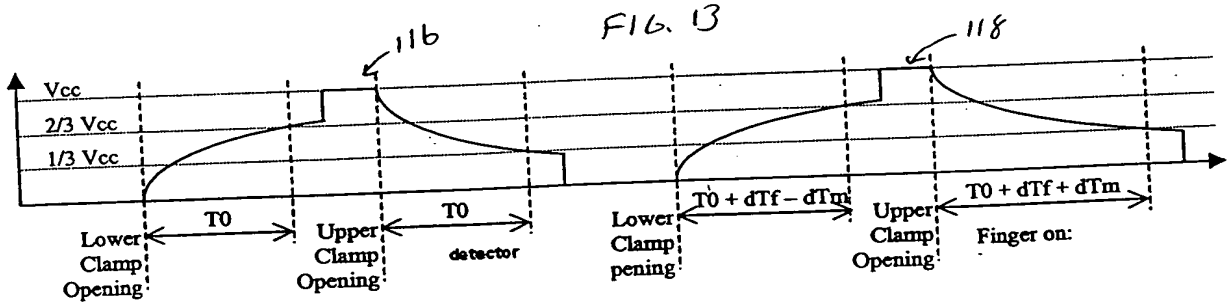


FIG. 14

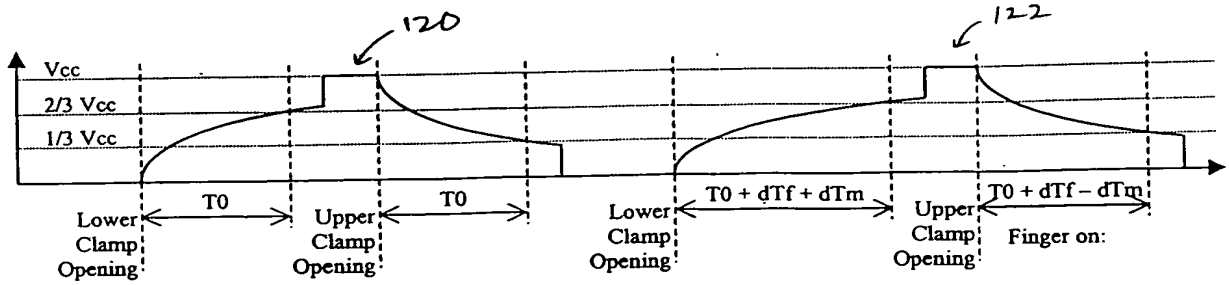


FIG. 15

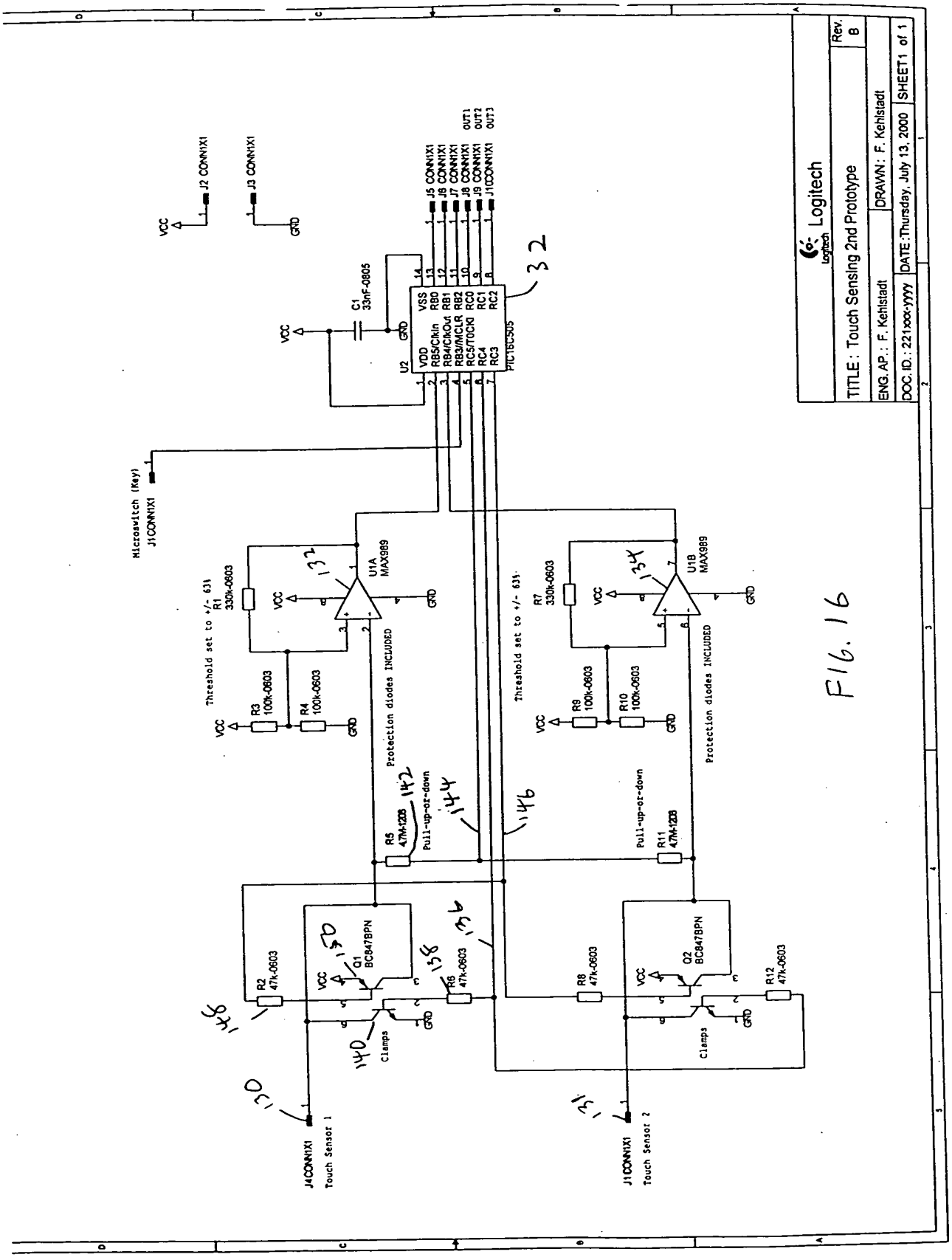

Logitech
TITLE: Touch Sensing 2nd Prototype
Rev. B
ENG.AP.: F. Kehlstadt
DRAWN: F. Kehlstadt
DOC.ID.: 221xxx-yyyy
DATE: Thursday, July 13, 2000
SHEET1 of 1
J2 CONN1X1
J3 CONN1X1
J5 CONN1X1
J6 CONN1X1
J7 CONN1X1
J8 CONN1X1
J9 CONN1X1
J10CONN1X1
OUT1
OUT2
OUT3
VCC
GND
C1 33nF-0805
U2 PIC16C505
VDD
VSS
RB5/CKin
RB0
RB4/CKOut
RB1
RB3/MCLR
RB2
RC5/T0CKI
RC0
RC4
RC1
RC3
RC2
32
Microswitch (Key)
J1CONN1X1
U1A MAX989
U1B MAX989
R1 330k-0603
R7 330k-0603
Threshold set to +/- 63i
R3 100k-0603
R4 100k-0603
R9 100k-0603
R10 100k-0603
Protection diodes INCLUDED
R5 47M-1206
R11 47M-1206
Pull-up-or-down
R2 47k-0603
R6 47k-0603
R8 47k-0603
R12 47k-0603
Q1 BC847BPN
Q2 BC847BPN
Clamps
J4CONN1X1
Touch Sensor 1
J1CONN1X1
Touch Sensor 2
132
134
136
138
140
142
144
146
150
152
154
156
120
121

FIG. 16

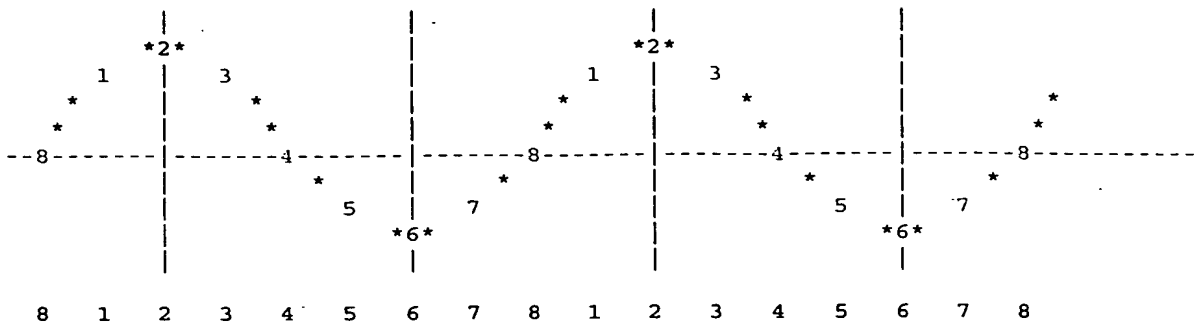


FIG. 17

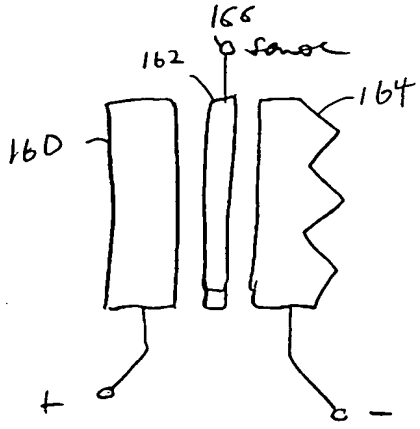


FIG. 18

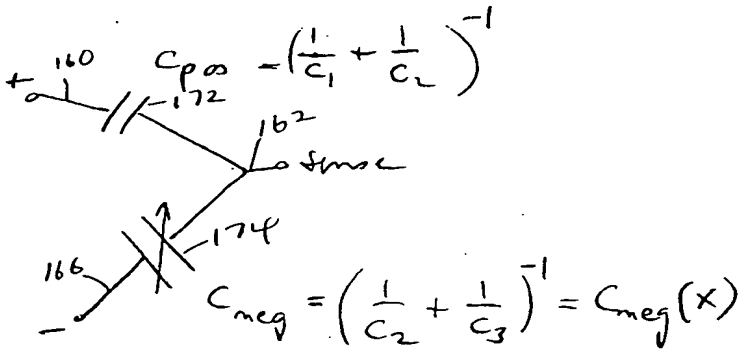


FIG. 19

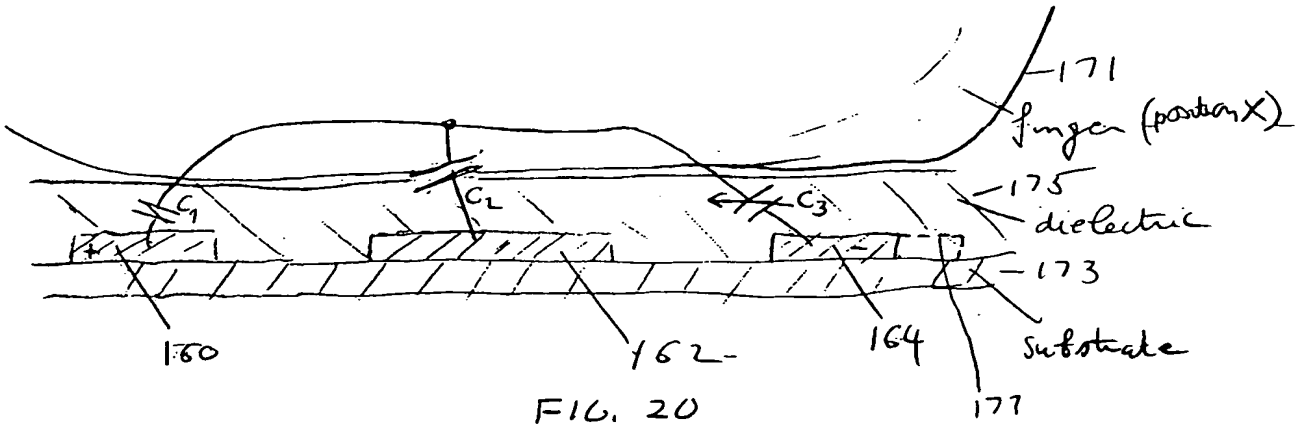
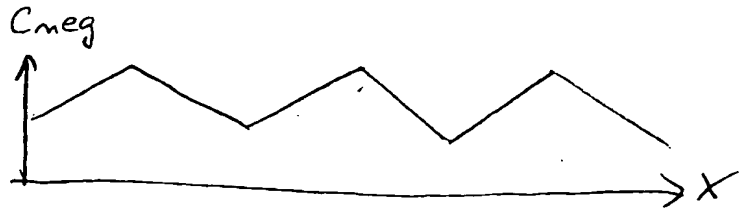


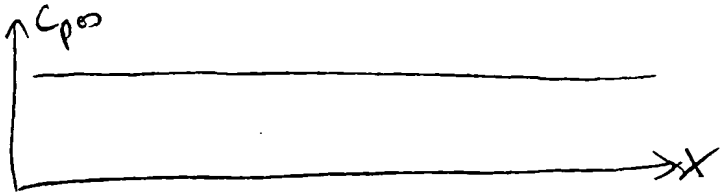
FIG. 20

EXPRESS MAIL NO. EV 335 888 705 US

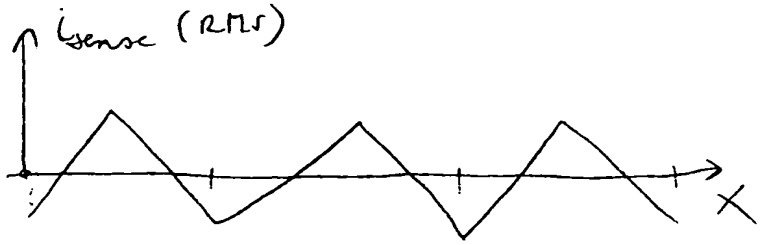
21A



21B



21C



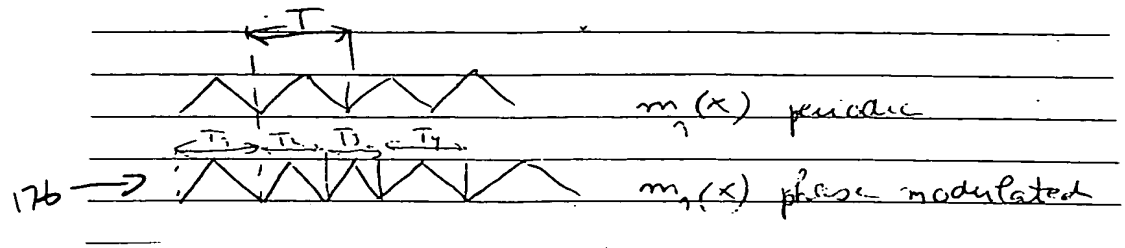

T
$m_1(x)$ periodic
T_1 T_2 T_3 T_4
176
$m_2(x)$ phase modulated

FIG. 22

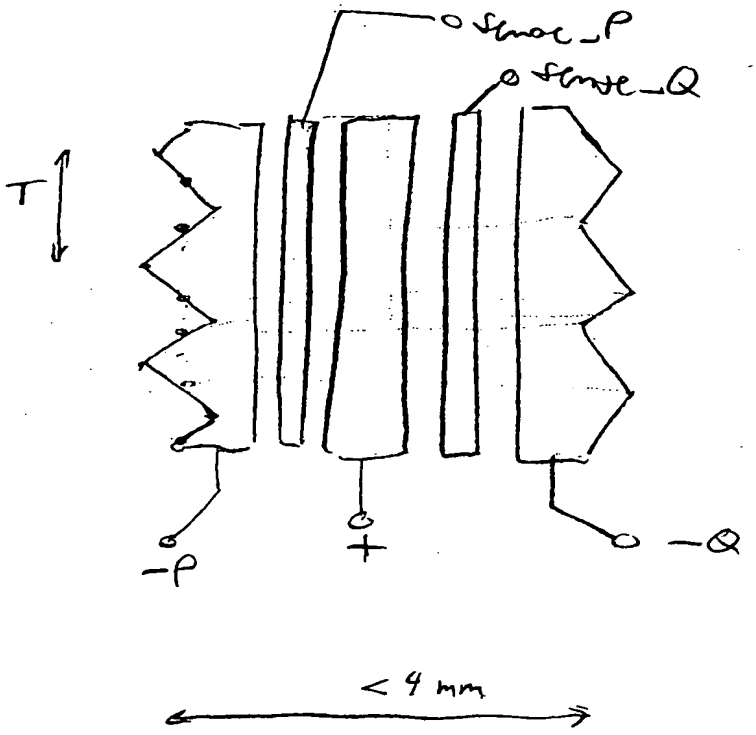

sense_P
sense_Q
T
-P
+
-Q
< 4 mm

FIG. 23